DOCUMENT RESUME

ED 176 847 PS 010 495

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TITLE Television Viewing, Family Style and Aggressive Behavior.
INSTITUTION Yale Univ., New Haven, Conn. Family Television Research and Consultation Center.
SPONS AGENCY National Science Foundation, Washington, D.C.
PUB DATE 79
NOTE 48p.; Filmed from best available copy; Paper presented at the Annual Meeting of the American Association for the Advancement of Science (Houston, Texas, 1979)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Aggression; Discipline; *Family Characteristics; *Family Environment; Family Problems; Intelligence Differences; *Play; *Preschool Children; Preschool Education; Social Class; *Television Viewing

ABSTRACT

As part of a larger 1-year examination of the relationship between television viewing patterns and spontaneous play in nursery school, this study focuses on (1) the correlation between children's television viewing patterns in the home and their level of aggression in nursery school, and (2) specific factors within family settings that might determine this correlation. The major sources of data were daily logs kept by parents of the type and frequency of programs watched by their children over two-week periods four different times during the year; concurrent observations and ratings of overt physical aggression directed toward other children on property during free play in nursery school; and family interview questionnaires concerning daily routines in the home, patterns of discipline, leisure activities, TV viewing habits, and indications of family difficulties. Data from the parent logs and observations were based on a sample of 141 three- and four-year-olds, while the interviews were given to a subset of four groups of children (N=10 per group) who represented the extremes in both TV viewing and aggression. Correlations between weekly TV viewing and aggression (r=.35) were significant, even with the effects of socioeconomic status, ethnicity, and IQ partialed out. Further analyses suggest a causal direction from heavy TV viewing to aggressive behavior. Results of the family interview study indicated significant differences among the groups of extremes on the level of order and organization in the family, and on the degree of outside activities engaged in by the family. (Author/SS)

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PS010495

Television Viewing, Family Style and Aggressive Behavior in Preschool Children

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This study was carried out at the Yale University Family Television Research and Consultation Center, J.L. Singer and D.G. Singer, Co-Directors.

This research was supported by a grant from the National Science Foundation, APR Program.

Paper presented at the 1979 AAAS Annual Meeting, Houston, Texas.

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Theoretical Background and Previous Research

The best available evidence on the development of aggression in children derives from studies that indicate that family patterns are critical in the emergence of violence. Children who have been exposed to at least one and often two parents who themselves are physically aggressive or who have participated as witnessed or victims in situations involving rejection or brutalization in the home turn out themselves to be more likely to be aggressive or antisocial. The absence of opportunities for learning alternative forms of coping with frustration other than through the socially supported means of aggression combined with indices of parental aggression or rejection prove to be the most effective predictors that children will become aggressive in later life (McCord, McCord, & Howard, 1970; Lefkowitz, Eron, Walder, & Huesmann, 1977). Broader socio-cultural evidence for particular patterns of violence such as those that can clearly be demonstrated in regions of the United States in which the ratio of homicides to suicides is much higher than elsewhere (Graham & Gurr, 1969) further support the implications of the social learning or cognitive analysis of the nature of aggression.

Without minimizing for a moment the important factors of parental example or cultural support for overt violence and aggression in children, it can also be maintained that exposure of children and adolescents to extensive demonstrations of violence on the television set in the home may add further to the likelihood that particular children will show an increment in aggressive behavior. In a sense, it can be argued for the child for the past two decades

that television may be considered "a member of the family". (J. Singer and D. Singer, 1975). The young American child not only grows up with behavioral modeling examples by parents as well as language and expressive content presented by the family figures, but also in an environment in which the television set presents a constant sourse of stimulation.

Bandura (1977) has carried out the most careful and detailed theoretical analysis of the nature of aggression from the standpoint of a social learning theory. His extensive experimental work is indicated very clearly that children do imitate observed acts of aggression whether carried out by live adults or filmed models. One can also argue that television not only demonstrates various forms of attacking other people, but that it may reduce some of the sensitivities to pain in others which most of us share to some degree (Cline, Kroft, & Courrier, 1973). It may also provide a basic moral support for violence since in program after program the "good guy" usually ends up physically assaulting or shooting the "bad guy" (J. Singer & D. Singer, 1975). The work of Tannenbaum and ~~Zipplemen~~ Zillmann (1975) and of Watt & Krull (1977) also suggest that the high rate of activity and arousal value of the TV may also predispose heavy viewers of the medium, especially children, to aggressive action.

The evidence reviewed by Bandura (1971; 1973) and by Baron (1977) makes it clear enough that at a theoretical level the type of aggressive content presented on television can indeed be imitated by children. Other studies involving relatively brief periods of exposure under controlled conditions also indicate that children will increase the level of aggression following daily

daily viewings of a film like Batman (Friedrich & Stein, 1973). Studies by Noble, (1970, 1973, 1975) also point to such outcome in short-term controlled studies of children's play following exposure to aggressive film. The research evidence accumulated in the studies supported by the Surgeon-General's Committee on Television and Social Behavior (Murray, Comstock, & Rubenstein, 1972) also supported the general view that children predisposed to be aggressive may increase the level of violence after exposure to aggressive material on television.

Field studies carried out by Bailyn (1959), Chaffee (1972), and Schramm, Lyle, & Parker (1961) have all followed up children over longer periods of time and related their television viewing to measures of overt aggressive behavior. In general, these studies do show a positive correlations on the order of .25 between TV viewing and the occurrence of aggressive behavior. While clearly these correlations are modest, they do point out the fact that of all of the many possible causes of aggression in children, there is at least some evidence that television contributes to some degree if by no means in a major fashion.

The most telling study to date has been that carried by Lefkowitz, Eron, Walden, & Huesmann, (1977). This research involved a ten year follow-up of boys and girls originally studied in the third grade. They found that for boys those who were more aggressive also turned out to be more regular viewers of aggressive material on television. They also found that "the greater was the boys preference for violent television at age nine, the greater was his aggressiveness both at that time and ten years later. The boys preference for violent television correlated .21 ($p < .01$) with its concurrent peer-rated aggressiveness and .31 ($p < .001$) with his aggressiveness ten years later."

(Lefkowitz et al., 1977, p. 115-116). In effect, these authors have predicted that one of the best single predictors at the age of nine of whether a boy will later turn out to be rated as aggressive by peers or by other criteria ten years later is the amount of violent television programming he is watching in childhood. It is important to note that these researchers went to great lengths to rule out possible mediating effects of intelligence, social class or family background as a means of explaining the correlation between violent TV viewing and subsequent aggression.

More recently, Belson (1978) has studied a group of boys in England between the ages of 12 and 17 and has followed their TV viewing patterns and aggressive behavior over a period of time. Belson's evidence also suggests that the watching of aggressive material on television, particularly that associated with relatively realistic violent activity rather than slapstick comedy or cartoons, is associated with aggressive behavior.

A Study of Preschoolers' TV Viewing and Aggressive Behavior

A study to be described here is a formed part of a larger examination of the relationship between television viewing patterns and spontaneous play in nursery schools.of three and four year children followed over a year's time. The intention of looking at three and four year olds was to obtain a group of relative "novices" to both the TV viewing experience and the situation of regular social interaction provided by beginning nursery school and daycare center attendance. In a sense, with respect to the relationship of television and aggression, one might view our approach as something like that of a

detective looking for the conclusive evidence, the "smoking gun" which might ultimately implicate TV as a causal influence in aggression.

Participants

The broader study involved 141 children with approximately equal numbers of boys and girls and of both sexes who were attending daycare centers and nursery schools in the New Haven area. Children were predominantly white, although there was sufficient variability of social class and ethnic background in the sample to yield significant correlational data when those social background factors were included in data analyses. The sample was predominently lower to middle middle class in socioeconomic status.

General Procedure

The longitudinal study over a year's time involved two major sources of data. One of these was the maintenance by parents of logs of the television viewing patterns of their children. These logs were kept daily for two week periods four different times during the year. Thus, there were two weeks of log keeping in February, 1977, April, 1977, October, 1977, and February, 1978.

During the same "probe periods" in which parents were keeping home logs of children's TV viewing, the children themselves were being observed during spontaneous play in the nursery school or daycare settings. Observations were carried out by pairs of observers who were blind to the experimental hypothesis or to the general backgrounds of the children. There were two observations within a given probe period for each child making a total of eight independent observations of the child over a year's time.

The child was observed for ten minutes. The observers recorded independently in detail the actual behavior of the child and his or her verbalization. Immediately following a series of observations the observers then proceeded to rate the child on a number of dimensions such as imaginativeness of play, positive affect, aggression, etc. These ratings were on a 1-5 scale and were based on definitions provided by the experimenters. Consensus of use of the definition had been obtained through a series of earlier training sessions with the observers. Reliabilities of observer pairs were tested during training and during actual observations and proved to be highly statistically significant.

Children were also interviewed and given some brief tests of intelligence and of predisposition to imagination, e.g., the Rorschach Inkblot in modified form, questions about imaginary playmates, etc. Parents also completed questionnaires about the occurrence of imaginary playmates in their children.

For our purposes here it is important to stress that the definition of aggression employed by raters in the present study emphasized overt acts of physical aggression directed towards other children or towards property. Aggressive play behavior in which, for example, two plastic soldiers might be knocked against each other to simulate a battle were not scored as aggressive. Playful shooting at each other by children in the course of the make-believe game similarly would not count as aggression. We limited ourselves to direct physical attacks by children against each other, knocking over of other's blocks, pushing, efforts to stamp on a doll or to tear posters off a wall. In general, we did not

find high levels of aggressive behavior in our children over the year. Indeed, on the five point scale even our most aggressive children did not average above a score of three except occasionally. Nevertheless, we obtained sufficient variability and also indications of consistency of aggressive behavior in particular children to produce reliable and statistical results.

Variables in the Study

Background and predispositional variables included IQ based on the Peabody Picture Vocabulary Test, the imagination interview and the Barron Movement Threshold Inkblot administered to the child as well as the parent's report of the child's imaginary playmates at home. Social class was rated on a five point scale based on the Hollingshead and Redlich criteria. was scored on a four point scale in which White was one, Oriental was two, Hispanic three and Black four. Correlational purposes we also included sex and age as variables with sex being scored as 1=female, 2=male. Observational variables included imaginativeness of play, positive affect, persistence of concentration, aggression, interaction with peers and with adults, cooperation with peers and with adults, and a series of mood ratings such as sadness, anger, fatigue, etc.

The language of the children such as the use of nouns, verbs and other parts of speech, the number of words used during the ten minute observation,, the average length of an utterance produced by the child during the ten minute observation and the meanlength of utterance were also scored. Particular note was also taken of whether or not references were made to television characters or settings.

The television variables included the Average Number of Hours the child watched TV Weekly (based on two week samples in each probe period), and the category of TV watching, e.g., cartoons, commercial children's TV shows (Captain Kangaroo), educational TV children's shows (Misterogers' Neighborhood, Sesame Street), situation-comedies, non-violent family drama (The Waltons), game shows (The Gong Show), action-adventure shows (The Bionic Woman, Wonder Woman, Emergency!)

In addition to categorizing the type and frequency of programming watched by the children, we also obtained from these television logs, data on whether the child watched alone, with other children or with parents and we also had parents rate the degree of concentration on the set the child showed during a given viewing period. This latter variable, TV Viewing Intensity turned out to be an interesting one because it tended to be negatively associated with the general frequency of TV viewing which the child showed but was positively associated with the degree of persistence the child showed during spontaneous play behavior in nursery school and in general with other measures of imaginativeness and social cooperation in settings outside the home.

Correlational Findings: TV Viewing and Aggression

The first question to be asked in our investigation of the relationship of TV viewing and aggression is whether there is any correlation at all between home viewing and aggressive behavior shown in the nursery school. The answer from our data is clearly a positive one. If we obtain the average scores for TV viewing frequency for the child across the entire year of the study and correlate that with the average aggression score shown by the child over the year (based on 8 independent observations) we find an average

correlation of .35 between weekly TV viewing and aggression ($p < .001$). Correlation between the viewing of specifically active shows and aggression is .33 ($p < .001$). Correlations between viewing of other types of programming and overt aggression are on the whole lower than those for the viewing of specific aggressive action shows and behavioral aggression.

If we break the subjects up by sex, we find that the average correlations for boys are still highly significant and just a few points lower than the average correlation. The results for girls are, however, much more dramatic; for aggression and weekly TV, the correlation is .54 ($p < .001$) and for aggression and viewing of action shows the correlation is .41 ($p < .001$). (Table I)

In general, these correlations are if anything higher than those reported in earlier studies with older children.

Another way of approaching this data is to look at the patterns of correlations and the clusterings that emerge across the many different variables of the study. Here we resort to factor analyses of the matrix of intercorrelations between the various background variables, the observed play variables and the language and television viewing variables. The results of factor analysis are presented in Table 2. which is appended. This data is based on factor analysis with oblique rotation. Essentially comparable results are obtained if orthogonal factor analyses are carried out and also if factor analyses are carried out at each of the four probe periods. The data presented here represent only the cumulative results over all four probes through the year. It is clear from the observation of this factor that Factor 1 represents a kind of general Expressiveness of Play factor which bears only minimal relationship to the TV viewing patterns the children show. Factor 2 has its highest loadings for the TV variables and might at first be considered an instrumental factor except for the fact that Aggression as observed in nursery school loads

.51 on this factor and ~~finally~~ of Anger shown during play also loads .37 on the factor. It is also apparent that social class loads noticeably on the factor suggesting that we get greater aggressiveness from children in the lower socioeconomic background than might have been expected from the earlier research. The third factor clearly represents a kind of social maturity, imaginativeness factor in which measures of peer cooperation, verbal expressiveness load positively along with some of the measures of imaginativeness while aggression and the more negative affective reactions load negatively. It is worth noting here that of the TV variables, Action TV tends to load negatively on this factor while the viewing of Educational TV shows tends to load positively. Since these are oblique factors it is possible to extract second order factors and it is clear that at the second order level Factors 2 and 3 are inversely related thus suggesting that the TV and aggression dimension is negatively linked to indications of inner imagination and cooperative behavior in social interaction.

Multiple Regression Analyses

It might next be asked what groupings of variables best predict the likelihood that a child will engage in aggressive behavior in the nursery school? For if we combine the sexes and look at the data accumulated over the year, it turns out that the viewing of action shows, of new shows and of the variety and game shows as well as total amount of weekend TV viewing are all combined to be significant predictors of Aggression (R^2=.489, F=9.3, df=13,127, p<.001). In general, in the attempt to predict aggression, we find heavy implications of the TV variables with action shows generally near the top in prediction.

Another form of multivariate methodology involves examination of the relationship between two "domains" of variables to see if one can find statistically significant relationships between clusters of variables already shown to relate to each other. This procedure is called canonical analysis. Such an analysis (Table 3) from our overall correlation matrix yields one significant canonical variable (X^2=244.59, df=175, p<.001, eigenvalue=.70, canonical correlation=.84). Of the two domains listed in the table, one group of variables are clearly the TV logs material including weekly TV, cartoons, variety game shows, adult oriented shows and action-adventure shows. The latter shows the highest loading on this domain. It is interesting to note that intensity of concentration during home viewing as well as the frequency of watching programs such as Misterogers' Neighborhood or Sesame Street load negatively on this variable group. On the second set of variables defining the canonical variate we find aggression, anger, sadness, gross motor activity and the use of TV references in spontaneous language as well as socioeconomic status all loading positively while IQ, fatigue-sluggishness and the mean length of utterances produced by the child load negatively. Essentially the same results are obtained if we repeat our analysis omitting the TV frequency variables and limit ourselves only to type of programming for this analysis.

In effect, canonical analysis indicates that there is a clear linkage between parents of TV viewing and more "unpleasant" behavioral patterns in the nursery school setting with particular emphasis on the action-adventure shows being linked to overt aggression. It is also clear that children who make much reference to television in their spontaneous activities line up on this canonical variant while children who talk a great deal without necessarily referring to TV tend to load negatively on the behavior dimension linked to

television viewing.

Partial Correlational Analysis

It might still be argued that since social class and general intelligence (as estimated by the Picture Vocabulary Test) do indeed show relationships to TV viewing our link of aggression and the watching of a great deal of TV or of the action shows is simply a consequence of intelligence, social class or possibly even ethnic differences in viewing patterns and concomitantly in aggression. To rule out the possibility that all correlations are simply a consequence of these mediating variables we carried out a series of systematic partial correlation analyses. These are presented in Table 4. Inspection of this table indicates quite clearly that even when we partial out either individually or together the effects of socioeconomic status, ethnicity and IQ we get almost no change in the level of significance of the correlations between aggression and weekly TV viewing or aggression and the viewing of action-adventure shows. This is particularly evident for girls where for boys there is some drop in the overall magnitude of the correlation but significant relationships still emerge. In other words, while it is clear that social class and ethnic status do bear relationships both with the occurrence of aggression and the amount of TV viewing or the tendency to view action shows they cannot themselves or in combination account for the persisting correlations between observed aggressive behavior in the children and reports of their home viewing patterns of TV.

Cross-Lag Correlational Patterns

We still have at best indicated only covariation of aggression and TV viewing. The question might be raised that it is just as likely that highly

aggressive children choose to watch a lot of television or a lot of action adventure shows as to argue that causality flows from viewing towards overt behavior. It might, of course, be argued that the search for simple causality is a fruitless one and that the growth patterns of three and four year olds are complexly determined. Nevertheless, one way to at least eliminate certain explanations is to look at correlations over time. Thus, if the frequency of TV viewing is itself more likely to be brought about by the fact that children already showing a good deal of aggression are attracted to the TV set we should expect that correlations at between aggression at earlier times and TV variables measures later in the year would generally run higher and be more likely to be statistically significant than those for TV viewing early in the year and aggression later in the year. Table 5 provides the necessary data broken down for total sample and for the boys and girls. If it is initial aggression which produces later TV viewing patterns, then we should get high correlations between aggression in the earlier probes such as 1 and 2 and later TV viewing. It is clear, however, from this table that in the initial probes the correlations between aggression at Time 1 and TV viewing at Time 2 or Time 3 are non-significant while those for weekly TV viewing at Probe 1 and aggression at Times 2 and 3 are statistically significant. Subsequently, during the year there are, however, reversals of this direction but the overall pattern of data certainly rules out the easy explanation that aggressive children prefer action TV shows and that this preferential orientation is sufficient to explain our correlation. If anything, a careful examination of the pattern of Cross-Lag Correlations seems to support the notion that earlier in the year the TV viewing patterns are much more likely related to later aggressive behavior. These results are even more

clear-cut if we look specifically at the action shows and their effect on later aggression.

Since there was an intervention study involved in this project designed in part to modify TV viewing and aggression patterns, it is possible that the effects of the intervention might have modified the linkage between aggression and TV viewing. This would be especially apparent in the last two probes when the effects of the intervention had an opportunity to take effect. It is clear that we do get correlational reversals more strikingly in these last periods. For this reason, we separated out the control group. Despite the small N that this leads to, reducing the chances of obtaining statistically reliable correlations, we do find on the whole higher correlations for the control subjects between the second and fourth or third and fourth probes of weekly TV viewing and subsequent aggression, probes ~~control group~~ while results are much lower for the total sample. Thus, it is possible that the intervention did indeed weaken the causal sequence of action TV viwing and subsequent aggression or total TV viewing and subsequent aggression for the sample.

In effect, our Cross-Lag correlations do not conclusively implicate TV viewing as an exclusive causal factor in producing later aggressive behavior. Nevertheless, they seem on the whole to rule out the explanation that it is simply a preferential pattern we are observing with aggressive children generally electing to watch more TV or to particularly choose action adventure shows. If anything, the trend does suggest that it is the TV viewing pattern which is more likely to be linked to later aggressive behavior.

This point is made in another way if we divide our subjects into extreme groups, those who show initially minimum TV viewing and minimum aggression or those who show initially heavy TV viewing and somewhat higher levels of aggression in the first probe. If we then plot subsequent increases in aggressive behavior we find as can be seen in Table 6 that the greatest increases in aggression emerge for those children who are initially either low in aggression or high in aggression but who are in both cases high in television viewing compared to the total sample. While the children who are low TV viewers and initially high in aggression also show an increase in aggression this is evident only by the time of the fourth probe. Those children who are initially low in TV viewing and low in aggression show only a very slight increase in aggressive behavior over the year.

To summarize, then, the results of our correlational analysis on the whole show a persisting link between TV viewing frequency and in particular the viewing of the more action oriented or arousing programming with the likelihood that the child will show some kind of aggressive behavior during nursery school play. While our results cannot definitively point to a causal direction, we do seem to be able to eliminate many of the usual explanations for this correlation such as the possible mediating effects of IQ, social class or ethnicity and also we have on the whole little support for the notion that the correlation simply reflects a preferential viewing pattern by initially aggressive children. If anything, our data seems to suggest that such young children as threes and four, the early tendency to be heavy TV viewers and to watch action-aggression shows is linked to later occurrences of aggressive behavior. It is important to note that we get comparable results from girls

as well as from boys. The study by Lefkowitz et al. (1977) had found such results only for boys and in general earlier studies had also reported the stronger results for boys than for girls. Our data even though based on a much smaller number of girls who actually show aggressive acts nevertheless reflects positive relationships between aggression and TV viewing for girls. Indeed, these results are even stronger in our study than for boys. One should keep in mind that during the past couple of years there has been a marked increase in the availability on TV of female "superheroines", Wonder Woman, Bionic Woman, Isis, Charlie's Angels all of whom represent female models who themselves engage in aggressive acts. It is hard to avoid the conclusion from our data that TV viewing by children of three and four does play and important part in the likelihood that they would show aggressive behavior at school and also the indication that they will show flashes of anger or other dysphoric moves or uncooperative behavior with adults in the course of the nursery school attendance.

Family Interview Study

Objectives of Family Interviews

In looking for the "smoking gun" that might link TV viewing to specific aggression shown at school, it seems desirable to try to look more closely at home life patterns of the children in our study. Even though our data indicate that gross measurements of family background such as ethnicity and social class cannot account for the link between TV viewing and aggression it remains possible that there are more specific factors within family settings that might determine this correlation. For example, it is entirely possible that children who watch a lot of television and also show a good deal of aggression can

come from homes that are characterized by considerable family fighting, disorganization, psychological or economic stress, etc. In such a case it could be argued that heavy TV viewing or even preference for action shows and the occurrence of aggression in the child both reflect reactions to

Our strategy was to identify four groups of children who represented the extremes in both TV viewing and aggression for our total sample. Thus, we were able to select ten children who could be identified over the year as high in TV viewing and high in behavioral aggression, ten children who were low in TV viewing and also high in behavioral aggression, ten children who were high TV viewers but showed relatively little overt aggression and finally ten children who were low both in TV viewing and aggression over the year. Each of the groups consisted of six boys and four girls. The groups were selected on the basis of their final total scores being above or below the sample median on the relevant variables and also on the basis of their scores being above or below the sample medians on at least three of the four probes. Thus, we had fairly clear-cut extremes [redacted] somewhat less than a third of our total sample.

The rationale for the choice of these extremes is as follows. If there is a major family mediating variable such as the occurrence of aggression in the family that is critical we should find essentially no difference between the two high aggressive groups who differ only in frequency of their TV viewing patterns. Both of these groups should differ markedly from the low aggression group by reflecting more family fighting, more parental conflict, more disruptive familial

situations, evidence of stresses and bereavements in the family life, perhaps even broken families or other home situations that have generally been found linked to overt aggressive behavior in older children. If, on the other hand, for this sample, the role of television plays a more causal role in the occurrences of aggressive behavior, then we might expect that our high TV-high aggression families not to differ very much from families who are low TV viewers with little aggression or high TV viewers with little aggression. In other words, we ought to find no clear-cut evidence of unique family factors that stimulate aggression and instead perhaps we might find a laxity in control by parents over TV viewing and a general availability of the TV set to the child for viewing of violent programming or other highly arousing material. The low TV but high aggressive group ought, however, to show some signs of aggressive modeling by parents or at least of disruption and difficulty so as to yield some clue as to why aggression should occur in the absence of heavy TV viewing.

We still are left with the question about why high TV viewers who do not score above the group median on aggression should not seem to be aggressive. Here we must consider the possibility that there may be factors in the pattern of TV viewing itself for these subjects and in the patterns of family attitude or in the imaginative style of the child which would operate to mitigate the potentially noxious influences of the television viewing patterns.

A special advantage of looking into the home life of the children also affords us a chance to verify some of the findings we have obtained from the regular parental log keeping and also from our observations in the nursery school. To what extent does it turn out that parents in direct interview report much the same frequency of TV viewing as we obtained from their log keeping records? To what

extent are children who are observed to be aggressive in the nursery school are so reported by their parents in their behavior at home? The reader should keep in mind that our interviewers as well as the parents did not know what groups their children fell into on the basis of the scoring of TV logs or of the behavioral variables. Thus, any consistencies which emerged can only be attributed to consistencies demonstrated by the child itself in different settings.

In preparing our questionnaires for use with the parents we tried to take into account the structural characteristics of the home, its orderliness, neatness, the availability of the kinds of broader culture such as books, record players and records, musical instruments, the availability of weapons (such as gun racks hanging on the wall), the indications of regular daily routines for parents and children, etc. Parents were encouraged to describe in detail the day-to-day wake-up, mealtime and recreational and sleep patterns of both parents and children. Indications of difficulties in the home ranging from parental disagreements, sibling disagreements, economic and emotional stresses, bereavements, family illnesses, parental separations, etc. were explored. Family television viewing patterns were also queried at considerable length. Evidence of emotional disturbance or patterns of distress in the children were also looked for in the replies of the parents about the children's health and general well-being.

We were particularly interested in obtaining evidence not only of disturbances but of possible strengths in the family life or specifically in the child's behavior. We considered it likely that parental emphasis on story-telling, reading, and imaginative stimulation might provide the child with alternative forms of play and operate against the child's direct imitation of aggressive material witnessed on television. We felt that this broader behavioral repertory would

reduce the chances that aggression would be a preferred or highly valued, perhaps because of over-learning, method of coping with frustration or stress. Goldberg,(1973) had reported that children who showed evidence of greater imagination were less likely to be aggressive than those who showed a paucity of fantasy in their repertory of reactions.

Results of Family Interviews

Family interviews lasted between 90 minutes and 2 hours generally. Mothers were extremely cooperative and talked willingly, indeed almost eagerly, about a tremendous range of details of family life. Thus, it was often possible for interviewers to score particular variables without even having to ask specific questions from the interview schedule.

Statistical tests were carried out on more than 30 items reflecting issues involving the daily routines, patterns of family discipline, leisure activities and TV viewing habits of each of the families. Perhaps the most striking outcome of the interview study or the indications that the families differed only on a relatively small number of variables. In effect, we find greater commonalities across the four types of families than differences between them. Thus, gross differences which might be expected to account for aggression such as evidence of family disputes, indications of violent or aggressive emphases in the home, indications of great family stress or disruption do not emerge predominently in one or another group. Perhaps a third of the families in this sample of 40 were undergoing periods of marital breakup or other types of stress such as recent bereavement. These problems were spread across the 4 subgroups, however, and did not predominate in any one of them.

In general, therefore, it does not seem reasonable to interpret the origins of aggression in these preschoolers as a consequence of any clear indications of gross modeling of family violence or as reactions to clear evidence of turmoil in family life. It is worth noting, however, that one group does stand out from the other three in relation to a series of statistical differences that are worth examining. This group is the high aggressive, high television viewing group. The families of these children are characterized by a considerable laxity in control of the television on the part of the parents and in general of a very limited range of outside interests and activities manifested by the family group. In other words, the children who are the high viewers and who also show more aggressive behavior in the nursery school seem to come from families in which, as the mother clearly indicates, the child essentially controls his or her own TV watching time, and there is no counter-vailing force provided by other family interests such as in music, reading, outdoor recreation, arts or crafts, etc. The impression presented is therefore one of family style in which television-viewing becomes a major focus of family life and recreation. Let us take a closer look at the profiles of the families as they emerged. Here, where possible, we will indicate those variables in which statistically reliable differences emerged for the 4 groups particularly indicating a deviation of the specific family types from the other families.

The children in our high aggressive and high television viewing group turn out to be significantly lower in their IQ scores than the children in the other groups ($p < .002$). AS a matter of fact, both high television-watching groups are significantly lower in IQ than the 2 groups that are rated as low frequency viewers but the high TV-high aggression groups with an average IQ of 104 is clearly the lowest. The high viewers in general are from families of somewhat lower

socioeconomic status than low viewers. Nevertheless, one cannot attribute the aggression of the child to the intelligence differences or a social class difference since the high television-low aggression group clearly does not show much aggression. The social class difference seems rather to be much more linked to the tendency simply to watch more television ($p<.001$). Interviewers rated the homes of both high aggression groups as somewhat more disorganized than that of the other families. Of particular importance in the high television-high aggression group was the fact that there were fewer toys in evidence around the home and by far the least evidence of books ($p<.0007$) and of musical instruments or records ($p<.05$). Children in this group tended to be allowed to stay up later at night. They also woke up later in the morning than the children in the other groups. Indeed, their father's patterns also reflected tendencies to wake up later in the morning both on weekdays and weekends ($p<.03$, $p<.07$) than the fathers in the other groups. Mothers in these families wake up earlier than other groups. In general, the high aggressive, high TV viewing families seemed to reflect a somewhat more conventional male-female relationship with the father showing less interest in homemaking activities than do the fathers in the other groups ($p<.02$). What seems to stand out more clearly than anything else for the high television-high aggressive child's life style is a gross laxity of control by parents of the Tv viewing situation in the home. These families report themselves to be generally more likely to watch television while they eat. As might be expected from the television data, the mothers report in the interviews as well that children from the high TV viewing groups spend more time watching television both in the morning and at night. The children in this group are

allowed to stay up later ($p<.04$), they are less likely to have a bedtime routine ($p<.07$), they are less likely to have stories told to them at bedtime ($p=.02$), and they are less likely to have a kind of calming down period before going to bed ($p=.09$). Thus, we see a pattern in which the child on awakening in the morning starts out with the TV, picks it up on return from nursery school and later joined apparently by the family goes on to watch until relatively late at night until he or she is trundled off to bed without much verbal interchange or a quieting period. The conventionality of these families is further stressed by the fact that this group is the one which stands out significantly from the others in requiring children to say a prayer before bedtime ($p<.008$). For three and four year olds a prayer is perfunctory at best and certainly quite different from the slow easing into bedtime described by the other families in which there is a story-time and some type of parent-child interchange. Again, the issue to be stressed is that on the specific items of who controls the TV set, it is the high TV-high aggression group mothers who report that it is the child who controls the television set in their homes ($p=.007$).

Keeping with the limited range of interests we have mentioned a closer look at the specific patterns for the high television-high aggression child's family suggests a minimum of outside interests. In contrast with other groups with children who are often taken to parks, picnics, museum or other cultural activities, the child in this group is most likely to spend time outside with parents going shopping. The only other outside recreation reported is trips to the movies with

parents. Thus, the influence of the popular media and of the potentially arousing or violent components of movies or TV are further emphasized by the nature of the family activities with the children. This point is further emphasized by indications of trends toward differences in parental tastes about TV fare. The fathers of this group are reported as showing more interest in team sports such as football and emphasizing body contact or aggressive games such as hockey and football. Their fathers generally watch this type of fare with the child on TV.

The mothers' reports confirm what we have observed about the children in the nursery school. For both high aggressive groups there is greater evidence of argument occurring between children in the family. Mothers described the high aggressive children from both TV watching groups as showing greater emphasis on physical versus verbal fighting. It is an important confirmation of our nursery school data and suggests consistency from home to nursery school in the aggressive tendencies of the children.

In our search for the origins of aggression what can we say about this special characteristics of the family life of both high aggressive groups irrespective of the amount of television watching? It is certainly true that children of both high aggressive groups are more likely to be punished by spanking according to reports by the mothers ($p=.08$). Mothers also report significantly more often that the child is unlikely to be rewarded by praise ($p=.01$). What is not clear of course is whether the fact that the children are already somewhat more aggressive brings upon them this reaction from parents or whether it is the parents' use of physical force that established a tone. Probably there is a

subtle interaction effect in evidence. It is interesting that the high aggressive children are reported in general by their mothers as less likely to show humor and laughter in their day-to-day patterns of behavior. This result in general is in accord with our own findings that positive affect in nursery school, smiling, laughing and intense interest tend to be negatively related to overt aggressive behavior.

What differences can we identify between the family styles of the children who are identified as aggressive in the nursery school but who differ drastically in amount of TV viewing? One of the most obvious things that emerges is that the high aggressive but low TV watching children are actually the most intelligent in our sample (an average IQ of 125). Descriptions of the family life patterns seem to reflect the fact that more often in this group both parents are intellectually gifted and professionally active. Family styles themselves indicate a considerable range of interests both cultural and intellectual for both parents. The mothers describe the families as extremely active and autonomous. Indeed, the interviewers who rated the descriptions by the mothers of family life as indicating that this family showed "highest activity level", "most competitiveness", and the most "autonomy" and the most disorderly in daily routines. Thus the families of these high aggressive but low TV watching children seem to reflect a good deal of self-directed, varied activities by parents that preclude in the hustle and bustle of their lives much watching of television by the children. In this low TV orientation it is worth noting; however, that the children do watch a higher proportion of action-detective shows than do the low aggressive children. It is conceivable, therefore, that these somewhat active, competitive families, apparently on the move

in various directions, provide considerable cultural stimulation for their children, minimized TV viewing, but do not preclude the child's watching of the potentially more violent shows. We cannot absolutely assert that this greater activity level in the family is a true modeling of aggressive behavior, but it may create an arousing trend and a greater sense of conflict in the child that then is manifested in greater aggressive behavior in the nursery school setting. It is important to keep in mind here that these children are the brightest in our sample so we cannot attribute aggression only to limited intellectual capacities.

What then are we to make of the children who are high TV viewers but low in aggression? Our interviewers characterized the homes of this group as perhaps the most orderly and organized of all. These children also seemed to stem from families in which there was a wide range of cultural activity. If one also examines the pattern of TV viewing, the group turns out to be watching relatively less of the action-adventure and violent shows and relatively more than any other group of the educational or public television shows such as Misterogers' Neighborhood and Sesame Street. On tests of imaginativeness, this group clearly scores highest. In other words, what we seem to see is a pattern in which parents while allowing the child considerable freedom in watching television a good deal does seem to have provided some countervailing influence in the way of cultural interests and influence towards the viewing of the more benign TV fare. The children in this group also seem to be the most imaginative and therefore may be in position to limit the more direct influence of what they watch and instead translate it into fantasy and make-believe games. There is a considerable body

of evidence that suggests that imaginativeness as measured by response to the Rorschach Inkblots is consistently negatively related to tendencies to be overtly aggressive or impulsive

Conclusions and Implications

Our exploration of the relationship of television to aggression in preschoolers has still not come up with the kind of "smoking gun" evidence that might satisfy the severest critics of television research and certainly the most enthusiastic supporters of the television industry. We have not found a clear indication of what produces aggression in our preschoolers. At the same time, it seems as if at least in our study of 40 families representing the extremes of television viewing and aggression in the child's nursery school behavior it is possible to rule out many other proposed explanations. It does not seem from our data reasonable to assume that children who watch a great deal of television and who also show aggression in the nursery school do so because of a generally disorderly and stressful family life. We cannot implicate violent behavior on the part of the parents in explaining the beginnings of aggression in our relatively normal and on the whole non-violent samples of preschoolers. The one factor that stands out most consistently is that laxity of family control around the TV set and opportunities for the children to watch the more action oriented aggressive shows are continually linked to the likelihood that the child will show aggressive behavior at home (according to parents' reports) and in the nursery school. Our high television-high aggressive children comes from families that are essentially lower middle-class, conventional in sex role orientation, traditional in respect to values and relatively limited with respect to range of cultural interests. For this group more than any of our others

the television medium seems like a major source of input into consciousness and general orientation of the child. The aggression shown by the children who are characterized as low TV viewers relative to our sample seems somewhat more explicable as a response to a very high pitch of activity in family life in a setting in which both parents tend to be professionals and to be "on the go", competitive and autonomous. We can see the possibility that a general arousal factor rather than specific modeling of aggression may account for some of the disruptive behavior ~~XX~~ these children show. A look at the families of the high TV watching, low aggression children suggests that sheer frequency of viewing is not in itself perhaps the critical factor in generating the likelihood of aggressive behavior at school. These children while watching a great deal of all kinds of television show a relatively greater proportion of viewing programming which we know from other research to have beneficial effects on children, shows like Misterogers' Neighborhood and Sesame Street which emphasize prosocial values and cognitive skill development. They watch a good deal of action shows, of course, but relatively less even of proportion to the amount of watching than do those children who are characterized as low viewers but who show a great deal ~~XX~~ more aggression in the nursery school. It is of interest, however, ~~if we inspect Figure 5~~ to notice that for our high TV viewers who are on the whole lower in aggression there is over the year a fairly sharp increase in aggression compared with the findings for our sample of children who are low both in aggression and in frequency of television viewing. Again, it is hard to avoid an inference that television may be having some impact on stimulating aggressive behavior.

Let us again remind the audience that our children are on the whole not grossly violent or aggressive preschoolers. Nevertheless, within this restricted range of aggressive behavior our data are consistent and it seems to us rather telling. There is a continuous link of TV viewing to the likelhoood that a child will be aggressive at the nursery school. The implications of this finding suggest a number of thoughts with which we will conclude.

First of all, there seems to be in this material a message to the television industry. The TV medium for better or worse is accessible to huge number of extremely suggestable preschoolers. For many of them, it becomes as Liebert & Neil have suggested a "window on the world" or in a sense as we have written a "member of the family". Thus, for this medium, even with the best interest of artistic creativity, it seems that a good deal of self-restraint is called for in programming. We do not mean to suggest that action and violence ought to be eliminated from the medium. Rather, self-restsraint should dictate that scenes of violence that are relatively easily imitated and that are relatively easily comprehended by young children ought to be eliminated wherever possible. The Greek dramas were full of violence, but it was kept off-stage and yet these plays still have considerable power when performed today. It is also possible that stylized violence when necessary to the plot or action and violence in settings remote from day-to-day reality may have little direct impact on children. These are researchable questions. It is clear, however, that we need much more serious thought on the part of producers and writers about how to present serious issues on television without relying on the cliché "punch-out," car chase and other forms of arousing situations that might have unfortunate effects on what is

essentially a family medium.

The industry also has, we believe, an obligation to provide a much greater range of fare for children. The vast profits made from commercials directed to children could be applied to producing a higher quality programming including many programs which have already been shown to have useful effects for children. Programs that stimulate imaginative play, that encourage sharing, cooperation, that emphasize values of helping and friendliness would be a tremendous use to preschoolers. The availability of kindly parental or avuncular figures who could communicate directly with preschoolers and give them some sense of trust and belonging (perhaps often in the face of contrary experiences at home) might be much more valuable experience and might counteract some of the more negative potential of the medium.

Ultimately, of course, the responsibility for controlling the effects of the medium on children rests with parents. It is clear to us from our interviews that the major differences between the children who watch large amounts of television but who also differ in their degree of aggression is the fact that in the case of the aggressive children, their parents show a complete lack of responsibility concerning what the children watch. They clearly indicate that they allow the child to determine what is on the TV set. By contrast, the parents of the children who are high in TV watching but low in aggression seem to be less involved with the amount of watching but do seem to play a more active role in steering the children towards "better types" of programming. They also differ in that they are more willing to spend time talking with their children, reading stories to them and providing them with a quiet time before bed. Ultimately, we cannot escape the fundamental role of the parent as a source of stability in the child's life, as a source of stimulation of imagination and inner control. There is little doubt that

television in the home is a delightful source of entertainment and a refuge from other cares for parents and children. But we prefer for the growing child the image of a quiet moment at bedtime when an adult sits by the child's side and tells a story or reads from a book in a way that forces the child to stretch its own imagination ~~in~~ child warm surroundings. Herein we feel lies the best basis for developing a sense of trust and at the same time a broader ability for private creativity.

TABLES

Television-viewing, Family-style and Aggressive Behavior in Preschool Children

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This study was carried out at the Yale University Family Television Research & Consultation Center. J. L. Singer & D. G. Singer, Co-Directors. Supported by a grant from the National Science Foundation, APR program.

Paper presented at the annual meeting of the American Association for the Advancement of Science, Houston, Texas; January 1979.

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TABLE 1

CONTEMPORANEOUS CORRELATIONS OF OVERT AGGRESSION RATINGS AND TELEVISION VIEWING

Probe Period	Boys	Girls	Total Sample
Aggression with Weekly Total Television Viewing			
February 1977	.32***	.04	.24**
April 1977	.26*	.26*	.30***
October 1977	.03	.68***	.24*
February 1978	.23*	-.21*	.14
Mean Scores Across Four Probes	.31***	.54***	.35***
Aggression with Viewing of Action Shows			
February 1977	.01	-.11	.05
April 1977	.24*	.17	.25**
October 1977	.19*	.64***	.34***
February 1978	.19*	-.01	.18*
Mean Scores Across Four Probes	.32***	.41**	.33***

NOTE: Parent Intervention began in the Spring of 1977 and some of its effects may be influencing results in the October 1977 and February 1978 probes.

*$p < .05$

**$p < .01$

***$p < .001$

TABLE 2

CORRELATIONS OF VARIABLES WITH FACTORS IN OBLIQUE ROTATION

Variable	"Expressive Play" Factor 1	"TV-Viewing and Aggression" Factor 2	"Cooperation, Persistence and Imagination VS. Aggression and Dysphoric Moods" Factor 3
Sex (M = 1, F = 2)	-.32		.26
IQ	.28	-.30	.31
Age			.30
SES (I-V)		.46	
Ethnic Groups (White = 1 Black = 4)		.21	
Imagination Interview (Home Play)			.35
Barron M Responses (Imagination)			.28
Imagination Companion Index			.32
Imaginativeness in Play	.78		.23
Positive Affect	.77		.36
Persistence During Play	.19		.52
Aggression	.27	.51	-.68
Peer Interaction	.82		.28
Peer Cooperation	.56		.56
Fearfulness	-.33		-.45
Anger	.28	.37	-.52
Sadness	-.31		-.50
Fatigue	-.60	-.18	
Liveliness (Motor activity)	.83	.25	
Number of Words	.69		.46
Number of Utterances	.72		.41

TABLE 2 (Cont'd.)

Variable	"Expressive Play" Factor 1	"TV-Viewing and Aggression" Factor 2	"Cooperation, Persistence and Imagination VS. Aggression and Dysphoric Moods" Factor 3
Mean Length of Utterance	.34		.50
Future Verbs	.35		
Weekly TV-Viewing		.97	
TV-Viewing Intensity (Home concentration)		-.17	.24
Cartoons	.22	.76	
Educational TV (Sesame St., Misterogers)			.30
Variety/Game Shows		.70	
Adult Family Drama (Waltons, etc.)		.67	
Action-Adventure (Violent Shows)		.66	-.21

NOTE: Omitted factor loadings are those close to zero.

TABLE 3

CANONICAL CORRELATION ANALYSES OF TELEVISION VIEWING WITH BEHAVIOR AND LANGUAGE VARIABLES

Variable	Loading on First Canonical Variate
Television Variables (Set 1)	
Weekly TV	.78
Cartoons	.69
Variety-Game Shows	.75
Adult Family Dramas	.42
Action-Adventure	.82
TV Intensity (concentration at home)	-.19
Education TV Children's Shows	-.20
Behavior, Language Variables (Set 2)	
Aggression	.46
Anger	.31
Sadness	.20
Liveliness	.28
TV References	.27
Future Verbs	.26
Socioeconomic Status	.61
Race	.39
IQ	-.22
Fatigue-Sluggishness	-.22
Mean Length of Utterances	-.19

TABLE 4

CONTEMPORANEOUS CORRELATIONS OF AGGRESSION AND TELEVISION VIEWING WHEN DEMOGRAPHIC VARIABLES ARE PARTIALLED OUT

(BASED ON MEAN SCORES ACROSS FOUR PROBES FOR TV AND BEHAVIORAL VARIABLES)(N = 121)

Variable Pair	Original Correlation	1st, 2nd and 3rd Order Partial Correlations Controlling for:						
		SES	ETHNIC GP.	IQ	SES-ETHNIC	SES-IQ	ETHNIC-IQ	SES-ETHNIC-IQ
School Behavior TV-Viewing		Total Sample						
Aggression-Weekly TV	.35***	.34***	.32***	.30***	.33***	.30***	.28***	.30***
Aggression-Action Shows	.33***	.31***	.28***	.28***	.29***	.29***	.24***	.25***
Anger-Weekly TV	.24**	.22**	.21**	.22**	.21**	.21**	.19*	.20*
Anger-Action Shows	.20**	.18*	.13	.18*	.13	.16*	.12	.11
		Boys						
Aggression-Weekly TV	.31***	.28**	.28**	.22*	.29**	.22*	.22*	.23*
Aggression-Action Shows	.32***	.29**	.29**	.25*	.30**	.25*	.23*	.24*
Anger-Weekly TV	.24*	.23*	.20	.19	.24*	.21*	.19	.23*
Anger-Action Shows	.32***	.32***	.26*	.28**	.30**	.30**	.25*	.29**
		Girls						
Aggression-Weekly TV	.54***	.51***	.53***	.54***	.50***	.52***	.53***	.51***
Aggression-Action Shows	.41***	.34**	.39***	.39***	.35*	.33**	.38***	.34***
Anger-Weekly TV	.25*	.18	.24	.23*	.16	.16	.22*	.15
Anger-Action Shows	.00	-.09	-.04	-.01	-.15	.10	-.07	-.18

***p < .001
**p < .01
*p < .05

TABLE 5

CORRELATIONS BETWEEN ACTION SHOW VIEWING AND SUBSEQUENT

OR PRIOR BEHAVIORAL AGGRESSION RATINGS

Mean Hours Watching Action Shows Probe	Overt Agression Probe	SAMPLE				
		Total Sample	Boys	Girls	Three-Year Olds	Control Group
1	2	.33***	.27**	.32**	.21*	.26
1	3	.35***	.28**	.40***	.37***	-.14
1	4	.16	.15	.19	.22*	.27
2	3	.22**	.19*	.24*	.31**	-.21
2	4	.08	-.02	.29*	.11	.20
3	4	.26**	.28**	.15	.43***	.38
2	1	.08	.12	-.14	.07	-.23
3	1	.04	.03	.10	.04	.23
4	1	.09	.11	-.14	.10	.18
3	2	.20*	.11	.23*	.12	.57*
4	2	.28*	.24*	.33**	.29*	.54*
4	3	.43*	.41***	.40***	.55***	.35

NOTE: Ns on which correlations are based may vary from group to group, thereby accounting for differing significance levels for similar correlation coefficients. Any intervention effects should be most evident between Probes 1-4, 2-4, 3-4. Control group should not reflect intervention effects.

*p < .05

**p < .01

***p < .001

TABLE 6

MEANS OF PHYSICAL AGGRESSION ON LATER PROBES BASED ON EXTREME SAMPLES

INITIAL (PROBE 1) AGGRESSION OF AND WEEKLY TV-VIEWING FOR BOYS (PROBE 1)

Variable Aggression	Low Television Low Aggression	High Television Low Aggression	Low Television High Aggression	High Television High Aggression
Aggression, Probe 1	1.0	1.0	1.4	1.4
Aggression, Probe 2	1.1	1.4	1.4	1.4
Aggression, Probe 3	1.4	1.5	1.2	2.2
Aggression, Probe 4	1.4	1.9	2.1	2.0
	(N = 24)	(N = 7)	(N = 10)	(N = 5)

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